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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/518,898

12/22/2004

Christopher Greenway

540-542

3194

23117

7590

06/12/2007

NIXON & VANDERHYE, PC  
901 NORTH GLEBE ROAD, 11TH FLOOR  
ARLINGTON, VA 22203

EXAMINER

BRIGGS, NATHANAEL R

ART UNIT

PAPER NUMBER

2871

MAIL DATE

DELIVERY MODE

06/12/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

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<b>Office Action Summary</b>	<b>Application No.</b> 10/518,898	<b>Applicant(s)</b> GREENWAY ET AL.	
	<b>Examiner</b> Nathanael R. Briggs	<b>Art Unit</b> 2871	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 19 March 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

***Response to Arguments***

1. Applicant's arguments, see pages 6-9, filed 19 March 2007, with respect to the rejection(s) of claim(s) 1-6 under 35 USC § 102 have been fully considered and are persuasive. Specifically, although Applicant is correct in noting that items 10 and 11 of Buhner in figures 3 and 4 do not recombine both refracted and reflected beams of the first and second inputs, the elements 46 and 47 do in fact recombine the reflected and refracted beams of the first and second inputs. However, elements 46 and 47 are passive liquid crystal elements, and not electro-optical switches. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of additional prior art.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

**3. Claims 1-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Caracci et al. (US 6,563,973).**

4. Regarding claim 1, Caracci discloses a switchable coupler (see figures 4-6 and 20-23, for instance) comprising: a first optical waveguide (110, column 6, lines 51-54) defining an inlet port for a first unpolarised light input (1) and a first outlet port (1), a second optical waveguide (110, column 6, lines 51-54) defining an inlet port for a second unpolarised light input (2) and a second outlet port (2), a polarisation splitter

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device (125a) positioned between said waveguides to split each of said first unpolarised light input (1) and said second unpolarised light input (2) into refracted (TE) and reflected (TM) polarised components, the waveguides being arranged to transmit said refracted (TE) and reflected (TM) polarised components of said first light input (1) by total internal reflection (column 6, lines 42-46) in the direction of said first outlet port (1), and the refracted (TE) and reflected (TM) polarised components of said second light input (2) by total internal reflection (column 6, lines 42-46) in the direction of said second outlet port (2), a first electro-optical switch (155a) positioned in the paths of said refracted (TE) and reflected (TM) polarised components of said first light input (1), said first electro-optical switch (155a) for recombining said refracted (TE) and reflected (TM) polarised components of said first light input (1) and to switch these combined components towards said second outlet port (2, see figure 20 vs. 23), and a second electro-optical switch (155a) positioned in the paths of said refracted (TE) and reflected (TM) polarised components of said second light input (2), for recombining said refracted (TE) and reflected (TM) polarised components of said second light input (2) and to switch these combined components to said first outlet port (1, see figure 20 vs. 23).

Claim 1 is therefore unpatentable.

5. Regarding claim 2, Caracci discloses a switchable coupler (see figures 4-6 and 20-23, for instance), as in claim 1, in which said polarisation splitter device (155a) includes liquid crystal (260) positioned between said waveguides. Claim 2 is therefore unpatentable.

6. Regarding claim 3, Caracci discloses a switchable coupler (see figures 4-6 and 20-23, for instance), as in claim 2, in which said liquid crystal material defines two separate cells (125a), one of said liquid crystal cells (125a) serving to split said first unpolarised light input, and the other of said liquid crystal cell (125a) serving to split said second unpolarised light input. Claim 3 is therefore unpatentable.

7. Regarding claim 4, Caracci discloses a switchable coupler (see figures 4-6 and 20-23, for instance), as in claim 1, in which at least one of said electro-optical switches (155a) includes liquid crystal (260) positioned between said waveguides, and an electric field device is provided to generate an electric field across said liquid crystal to operate the electro-optical switch (column 6, lines 42-46). Claim 4 is therefore unpatentable.

8. Regarding claim 5, Caracci discloses a switchable coupler (see figures 4-6 and 20-23, for instance), as in claim 4, in which said liquid crystal material defines two separate cells, and one of these liquid crystal cells forms part of each said electro-optical switch (155a). Claim 5 is therefore unpatentable.

9. Regarding claim 6, Caracci discloses a method of coupling first and second inputs of unpolarised light (see figures 4-6 and 20-23, for instance) comprising: splitting each of (125a) said first (1) and second (2) inputs into respective refracted (TE) and reflected (TM) polarised components, transmitting said refracted (TE) and reflected (TM) components of said first input (1) to a first electro-optical switch (155a) for recombining the said refracted (TE) and reflected (TM) components of said first input (1) and to switch the recombined output from a first outlet to a second outlet (1 and 2, compare figures 20 and 23), transmitting said refracted (TE) and reflected (TM)

components of said second input (2) to a second electro-optical switch (155a) for recombining said refracted (TE) and reflected (TM) components of said second input (2) and to switch said recombined output from said second outlet to said first outlet (1 and 2, compare figures 20 and 23), and selecting the operation of said first and second electro-optical switches (155a) to couple said first (1) and second (2) inputs into an outlet from the group comprising said first outlet and said second outlet (1 and 2, compare figures 20 and 23). Claim 6 is therefore unpatentable.

### ***Conclusion***


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nathanael R. Briggs whose telephone number is (571) 272-8992. The examiner can normally be reached on 9 AM - 5:30 PM Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571) 272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Nathanael Briggs  
6/6/07

  
ANDREW SCHECHTER  
PRIMARY EXAMINER